

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY



(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 31 JAN 2006

WIPO

PCT

Applicant's or agent's file reference P/63938.WOP/PS		FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/EP2004/052835		International filing date (day/month/year) 05.11.2004	Priority date (day/month/year) 08.11.2003	
International Patent Classification (IPC) or national classification and IPC H04L29/12				
Applicant MARCONI UK INTELLECTUAL PROPERTY LIMITED et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 19.08.2005		Date of completion of this report 30.01.2006		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Raible, M Telephone No. +49 89 2399-7309 		

BEST AVAILABLE COPY

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/052835

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-6, 8-22	as originally filed
7	received on 20.10.2005 with letter of 18.10.2005

Claims, Numbers

6-13	received on 19.08.2005 with letter of 18.08.2005
1-5, 14-17	received on 20.10.2005 with letter of 18.10.2005

Drawings, Sheets

1/6-6/6	as originally filed
---------	---------------------

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☒ the claims, Nos. 18,19
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/052835

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application,
 - ☒ claims Nos. 1-17
because:
 - ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):
 - ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
 - ☒ the claims, or said claims Nos. 1-17 are so inadequately supported by the description that no meaningful opinion could be formed.
 - ☐ no international search report has been established for the said claims Nos.
 - ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
 - the written form ☐ has not been furnished
 - ☐ does not comply with the standard
 - the computer readable form ☐ has not been furnished
 - ☐ does not comply with the standard
 - ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
 - ☒ See separate sheet for further details

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Unfortunately, a statement with regard to novelty and inventive step is not possible with the application in its present form as both independent claims 1 and 17 extend the scope of protection to cases which are not fully supported by the description, contrary to the requirements of Article 6 PCT.

Both independent claims specify that call agents scan received call set-up messages to ascertain if the **address information** contained therein contains entries that were sent to a preceding call agent.

Consequently, the description should disclose ways how a call agent may ascertain that certain entries were actually sent to a preceding call agent. The description discloses such a way **only under specific circumstances**.

A scanning of address information only is not sufficient to recognise potential media loops respectively tromboning. Especially, this is the case when a call setup traverses several networks which use private address ranges, e.g. two networks which both use the same of the address ranges defined in RFC 1918, chapter 3.

Consequently, the description discloses the following conditions that must be met in order to detect that certain entries were sent to a preceding call agent:

Every address region **must have a globally unique identifier** that can be recognised by all call set-up devices in that region (see e.g. page 12, line 6 to 8 or page 17, line 12 to 14). This identifier is used to identify messages coming from the own network (e.g. page 13, line 1 to 3). Consequently, the messages exchanged between call set-up devices must contain addresses **and additionally** such kind of identifier (e.g. page 12, line 3 to 4).

At present, however, both conditions in combination are not contained in any claim; the scope of protection of all claims extends to cases which are not supported by the description.

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/EP2004/052835

Re Item VII

Certain defects in the international application

Independent claims 1 and 17 are not in the two-part form in accordance with Rule 6.3(b) PCT, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

The invention provides a call set-up system, for the set-up of calls in a plurality of packet-switched networks connected to each other by network address translation (NAT) devices using a plurality of call agents, comprising means to send messages to successive call agents, which messages include address information for media packets
5 within networks associated with the call agents, to define the media path of the call, at least some of the messages also including address information for media packets sent to preceding call agents involved in the set-up of the call. At least some of the call agents are arranged to scan the call set-up messages received to ascertain if the address information previously inserted by this network includes entries for the associated
10 network that were sent to a preceding call agent, wherein the NAT device is adapted to close the media path for re-entry to the network.

The system allows the media path of the call to take advantage of possible short-cuts because call set-up does not only pass, as hitherto, address information for media
15 packets within the network associated with the call set-up device, but also address information within networks associated with previous call set-up devices as well. Thus, if a call was set up from a first network to a second, and then back to the first, the messages passed would enable the media path of the call to be local to the first network only rather than, as hitherto, traversing addresses in the second network. The present
20 invention allows the route of associated media flows to be optimised. The call signalling, which consumes little network resource, could retain its original path.

Call set-up systems in accordance with the invention will now be described in detail, by way of example, with reference to the accompanying drawings, in which:

25

Figure 3 which shows the set-up of a call using modified SIP signalling according to the invention;

CLAIMS

1. A call set-up system, for the set-up of calls in a plurality of packet-switched networks connected to each other by network address translation (NAT) devices using a plurality of call agents, comprising means to send messages to successive call agents, which messages include address information for media packets within networks associated with the call agents, to define the media path of the call, at least some of the messages also including address information for media packets sent to preceding call agents involved in the set-up of the call, and at least some of the call agents are arranged to scan the call set-up messages received to ascertain if the address information previously inserted by this network includes entries for the associated network that were sent to a preceding call agent, wherein the NAT device is adapted to close the media path for re-entry to the network.
2. A call set-up system as claimed in claim 1, in which each such call agent is arranged to cause the address information to revert to the form produced by that preceding call agent, to enable the eventual media path to make a short-cut.
3. A call set-up system as claimed in any one of claims 1 or 2, in which at least some of the messages include session descriptions.
4. A call set-up system as claimed in any one of claims 1 or 2, in which at least some of the messages include encrypted address information.
5. A call set-up system as claimed in any one of claims 1 or 2, in which at least some of the messages include references to address information stored within the networks.

6. A call set-up system as claimed in any one of claims 1 or 2, in which at least some of the messages include the identifier of the network that the media packets are to traverse.
7. A call set-up system as claimed in claim 6, in which each network has a globally unique identifier.
8. A call set-up system as claimed in any one of claims 1 to 7, in which the call agents use an offer/answer protocol.
9. A call set-up system as claimed in claim 8, in which the offer/answer protocol is Session Initiation Protocol (SIP).
10. A call set-up system as claimed in claim 9, in which the address information for media packets sent to call agents is contained within a stack structure as a multipart attachment to the SIP message.
11. A call set-up system as claimed in claim 10, in which if the stack of messages contains an entry for the region being entered by the offer or answer message, the call set-up system is adapted to scan through the stack until the deepest matching entry becomes the new session description.
12. A call set-up system as claimed in claim 11 adapted to close any pinhole so opened in a NAT device into the region being entered by the offer or answer message.
13. A call set-up system as claimed in any one of claims 10 to 12, in which if a stack of messages has no entry for the region being left by the answer message, the call set-up system is adapted to close any pinhole in a NAT device opening into that region.

14. A call set-up device as claimed in any one of claims 1 to 13, in which the call agents are arranged to control the NAT devices.
15. A call set-up system as claimed in any one of claims 1 to 14, in which the call agents are incorporated in the NAT devices.
16. A call set-up system as claimed in any one of claims 1 to 15, in which at least one of the networks is a 3G radio network.
17. A call set-up method for the set-up of calls in a plurality of packet-switched networks connected to each other by network address translation (NAT) devices using a plurality of call agents, which method comprises the step of sending messages to successive call agents, which messages include address information for media packets within networks associated with the call agents, to define the media path of the call, at least some of the messages also including address information for media packets sent to preceding call agents involved in the set-up of the call and scanning by at least some of the call agents the call set-up messages received to ascertain if the address information previously inserted by this network includes entries for the associated network that were sent to a preceding call agent, and closing by the NAT device the media path for re-entry to the network.